

Review Problems

① Multiply and simplify

① $\sqrt{8} \cdot \sqrt{12}$

$$= \sqrt{96}$$

$$\downarrow$$

$$\sqrt{16} \cdot \sqrt{6}$$

$$\downarrow$$

$$\boxed{4\sqrt{6}}$$

② $2\sqrt{7} \cdot 3\sqrt{7}$

$$= 6\sqrt{49}$$

$$\downarrow \quad \downarrow$$

$$6 \cdot 7$$

$$\boxed{= 42}$$

③ $2\sqrt{15} \cdot 3\sqrt{3}$

$$= 6\sqrt{45}$$

$$\downarrow \quad \downarrow \quad \downarrow$$

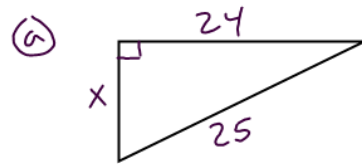
$$6 \cdot \sqrt{9} \cdot \sqrt{15}$$

$$\downarrow$$

$$6 \cdot 3 \cdot \sqrt{15}$$

$$\boxed{18\sqrt{15}}$$

② Find x



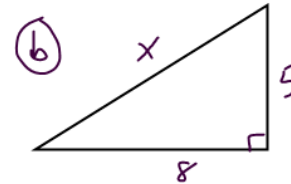
$$a^2 + b^2 = c^2$$

$$x^2 + 24^2 = 25^2$$

$$x^2 + 576 = 625$$

$$x^2 = 49$$

$$\boxed{x = 7}$$



$$a^2 + b^2 = c^2$$

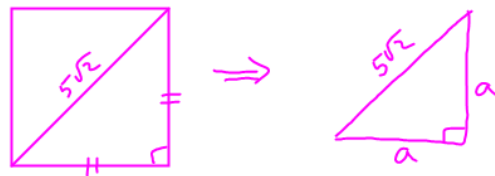
$$5^2 + 8^2 = x^2$$

$$25 + 64 = x^2$$

$$89 = x^2$$

$$\boxed{x = \sqrt{89} \text{ or } \approx 9.43}$$

③ If the diagonal of a square is $5\sqrt{2}$, what is the area?



$$a^2 + b^2 = c^2$$

$$a^2 + a^2 = (5\sqrt{2})^2$$

$$2a^2 = 5\sqrt{2} \cdot 5\sqrt{2}$$

$$2a^2 = 25\sqrt{4}$$

$$2a^2 = 25 \cdot 2$$

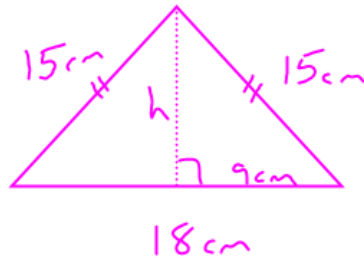
$$2a^2 = 50$$

$$a^2 = 25$$

$$a = 5$$

$A_{\text{square}} = a \cdot a$
 $A = 5 \cdot 5$
 $\boxed{A = 25 \text{ units}^2}$

- ④ Find the area of an isosceles triangle with a base of 18cm and a perimeter of 48.



$$P = 48 = 18 + x + x$$

$$30 = 2x$$

$$x = 15$$

$$h^2 + 9^2 = 15^2$$

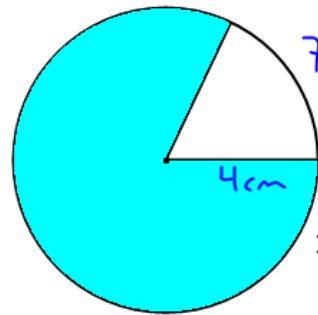
$$h^2 + 81 = 225$$

$$h^2 = 144$$

$$h = 12$$

$$A = \frac{b \cdot h}{2} = \frac{18 \cdot 12}{2} = \boxed{108 \text{ cm}^2}$$

- ⑤ Find the shaded area



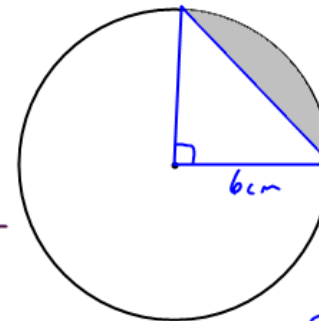
$$A = \pi r^2$$

$$A = \pi (4)^2$$

$$A \approx 50.3 \text{ cm}^2$$

$$\frac{70}{360} \cdot 50.3 = 9.8 \text{ cm}^2 \text{ (Sector)}$$

$$\text{Shaded} \Rightarrow 50.3 - 9.8 = \boxed{40.5 \text{ cm}^2}$$



$$A = \pi r^2$$

$$A = \pi (6)^2$$

$$A \approx 113.1 \text{ cm}^2$$

$$A_{\text{Total}} \approx 113.1 \text{ cm}^2$$

Sector

$$\frac{90}{360} \cdot 113.1 \approx 28.3 \text{ cm}^2$$

Triangle

$$A = \frac{b \cdot h}{2} = \frac{6 \cdot 6}{2} = 18 \text{ cm}^2$$

$$\text{Shaded} = 28.3 - 18 = \boxed{10.3 \text{ cm}^2}$$

⑥ Multiply

$$\textcircled{a} (x+5)(x+7)$$

$$x^2 + 7x + 5x + 35$$

$$\boxed{x^2 + 12x + 35}$$

$$\textcircled{b} (2x-8)(3x+4)$$

$$6x^2 + 8x - 24x - 32$$

$$\boxed{6x^2 - 16x - 32}$$

⑦ Factor

$$\textcircled{a} x^2 + 18x + 77$$

add mult

$$(x+7)(x+11)$$

$$\textcircled{b} x^2 - x - 30$$

$$(x+5)(x-6)$$

⑧ Solve for x

$$\textcircled{a} 3(x+2)(x-4)=0$$

$$x = -2, 4$$

$$\textcircled{b} x^2 + 5x - 24 = 0$$

$$(x+8)(x-3) = 0$$

$$x = -8, 3$$